EPA Regional and National Lead Cleanups

Eureka

The residential yard cleanup in Eureka, NV is ongoing and addresses lead contamination originating from historic smelting operations in the area. There are current plans to initiate field work in April/May 2016 to construct a repository for permanent storage of contaminated soil from residential yard cleanups, clean up approximately 50 additional residential properties, and cover one of the hillsides on the site that has very high levels of contamination. The cost of field work for the 2016 season is anticipated to be $4-5 million. Blood lead testing is completed at the site by partnering with Nevada Division of Environmental Protection (NDEP) and the County Rural Health Unit.

- **Cleanup Duration:** The cleanup is ongoing. Two work seasons (2-3 months each, in 2013 and 2014) have been completed. The work is planned to be completed over 5 years due to limited accessibility in winter months. Cleanup can only be completed from April to October.
- **Number of properties cleaned up:** To date, 43 properties have been cleaned up. There will be over 200 residential yards addressed in total.
- **Lead levels prior to cleanup:** Concentrations of lead in excess of 3,000 ppm have been found at Eureka, with the highest levels up to 100,000 ppm. In addition, arsenic levels above 600 ppm and up to 32,000 ppm have been found.
- **Total cost:** An Engineering Evaluation/Cost Analysis (EECA) was recently completed that estimated the total cleanup cost to be approximately $27 million. Approximately $20 million of this cost is to clean up residential properties, with the remaining costs used to cover slag piles and clean up 4 hillsides that were the locations of former smelters.
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Asarco Hayden

The Asarco Hayden residential yard cleanup in Hayden and Winkelman, AZ was completed as a company-led project overseen by EPA. Lead contamination at the site originated from historic mine and smelter operations. Site contamination included arsenic, copper, and lead. To date, this is the biggest residential yard removal project in Region 9, though it will likely soon be surpassed by other sites (such as Eureka, NV).

- **Cleanup Duration:** The cleanup lasted from December 2008 to December 2009. This included yard sampling and significant mobilization and demobilization time.
- **Number of properties cleaned up:** 266 parcels were cleaned up, and 800 parcels were sampled.
- **Lead levels prior to cleanup:** The cleanup cutoff was 400 ppm, and the highest lead level identified during sample was about 1,500 ppm.
- **Total cost:** $8 million
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West Oakland Residential Lead Cleanup

The West Oakland Residential Lead Cleanup was completed in an urban neighborhood in Oakland, CA

with lead contamination in yards originating from several sources, including historic industrial services used to support the railroad, leaded gasoline due to the area's proximity to several freeways, and lead-containing household items that were likely buried in yards. The lead cleanup in West Oakland used phosphate immobilization with fish bones as an in-situ treatment to address lead found in soil. The use of phosphate immobilization was widely supported by the community as a way to reduce the amount of excavation needed during cleanup and therefore limit the number of trucks, excavators, and other large vehicles that would enter the community. During the West Oakland lead cleanup, the contaminated soil was removed and disposed of up to 6 inches in depth. Fish bones were then mixed in with the next foot of contaminated soil for phosphate immobilization. This was then capped with six inches of clean, uncontaminated soil.

- **Cleanup Duration:** The cleanup began in the fall of 2011 and was completed in the summer of 2014. There was significant outreach done prior to the start of the cleanup. The actual removal lasted about 24 months, with 6 months of preparation prior to the removal and 6 months to close out the project after its completion.
- **Number of properties cleaned up**: During the removal, just under 300 yards were cleaned up.
- **Lead levels prior to cleanup:** The highest lead levels seen were around 3000 ppm, with the average being about 800 ppm.
- **Total cost:** $4.5 million
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Coeur D'Alene Basin/Bunker Hill Superfund Site – Region 10

The Coeur D'Alene Basin/Bunker Hill lead cleanup in northern Idaho was initially started using removal authority in a 21 square mile area around the Bunker Hill site and was then expanded under the remedial process to encompass 130 river-miles in the Coeur D'Alene Basin. Site contamination originated from historic mining, ore-processing, and smelting operations in the area. During the cleanup, EPA removed soil up to one foot in depth in yards and installed a barrier fabric. There is an institutional control program in place at the site that requires homeowners whose yards were remediated to request a permit through the Panhandle Health District before performing any excavation on their property. Once the permit is acquired, homeowners receive instructions to properly dispose of contaminated soil. The Panhandle Health District receives funding from EPA and the State of Idaho to do annual blood lead testing in the communities where the cleanup was performed.

- **Cleanup Duration**: The residential cleanup began in 1986 with removal actions through 1991. Records of Decision (RODs) were then issued in 1991 and 2002 to perform the remaining cleanup under remedial authority. Cleanup of residential yards is ongoing and will likely last about two more years. Cleanup may continue for several years beyond that at additional properties where EPA has had difficulty gaining access.
- **Number of properties cleaned up**: To date, 7,000 residential and commercial properties have been cleaned up.
- **Lead levels prior to cleanup:** The action level for lead for this cleanup has been 700 ppm. Most contaminated residential properties fall above 1000 ppm, with "typical" levels falling in the 3000-4000 ppm range.
- **Total cost:** $356 million

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Omaha Lead Superfund Site – Region 7

The Omaha Lead Superfund Site includes surface soils present at residential properties, child-care centers, and other residential-type properties in the City of Omaha, Nebraska that were contaminated as a result of deposition of air emissions from historic lead smelting and refining operations. At the site, about one out of three residential yards have lead in the soil at concentrations above the health-based limit of 400 parts per million (ppm). During the lead cleanup, EPA removed contaminated soil down to one foot in depth in yards and two feet in depth in gardens (where produce would be grown for consumption).

- **Cleanup Duration:** EPA's cleanup of residential yards began in 1999 and was completed on December 31, 2015. The City of Omaha, under a cooperative agreement of $31 million with EPA, will continue to try to gain access at a few hundred yards where EPA has not yet been able to obtain property owner permission to sample and do cleanup work.
- **Number of properties cleaned up:** In total, EPA cleaned up approximately 13,000 yards and sampled 40,000 yards.
- **Lead levels prior to cleanup:** Many yards had lead levels of over 2,500 ppm. EPA cleaned up these yards with highest levels first and ultimately cleaned up all yards with levels over 400 ppm.
- **Total cost:** $309 million
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Price Battery Superfund Site – Region 3

The Price Battery Superfund site is located in the Borough of Hamburg, Berks County, Pennsylvania, and consists of the former Price Battery manufacturing facility, adjacent residential areas, and other nearby contaminated areas. The facility went through several transfers of ownership but was acquired by Exide Technologies Inc. in 1987. Exide ceased manufacturing at the site in 1995. Site contamination was caused by aerial dispersion of historic emissions from the Price lead smelting facility. In addition, lead-contaminated battery wastes and casings were used as fill material throughout the Borough of Hamburg and surrounding vicinity. The cleanup was completed using both removal authority and remedial action. In addition to excavating and removing contaminated soils in yards during the cleanup, EPA also cleaned up the interiors of properties that had exterior lead contamination above the cleanup levels of 572 ppm and interior lead dust levels on floors above 40 $\mu g/ft^2$.

- **Cleanup Duration:** The remedial action at the site lasted approximately 3 years. There was no pause in residential cleanup activities between the removal and remedial actions.
- **Number of properties cleaned up:** In total, EPA cleaned up the yards of 555 properties. In addition, the interiors of 402 properties were cleaned.
- **Lead levels prior to cleanup:** Lead levels prior to cleanup generally ranged between 500 ppm to a few thousand ppm. However, lead levels in some yards next to the former smelter were found to have lead levels greater than 100,000 ppm.

- **Total cost:** Approximately $30 million for the combined Removal/Remedial Action costs.
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